

JUVENILE ATROPHY OF THE
OPTIC NERVE

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ST. LOUIS

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As a cause of blindness in children and adolescents optic atrophy has not received the attention it deserves. Of 559 pupils in attendance at the Missouri School for the Blind during the last 23 years, 84 or 15 per cent. had lost their sight from optic atrophy, the second largest single cause of blindness. However, in our figures below, only those cases are included whose visual disturbance occurred under 20 years of age. In this way we avoid cases of optic atrophy resulting from acquired syphilis. There were no cases of Leber's hereditary optic atrophy.

The 73 pupils blinded before 20 years of age by optic atrophy entered the school in the school years indicated. The percentage figure after each school year is estimated on the number of new pupils for that year.

A gradual diminution in the amount of juvenile optic atrophy in this school is clearly indicated although the changes are not great. Nevertheless the number of optic atrophy cases among new pupils entering the school between 1920 and 1925 was two more and between 1925 and 1928 was one more than the number of cases of ophthalmia neonatorum entering in the same periods.

Forty, or 55 per cent. of the 73 juvenile optic atrophy cases are boys and 33, or 45 per cent. are girls; 3 of the boys and 1 of the girls are colored.

As to the cause, in 10 of the 73 cases, meningitis was given on the application form, tumor of the brain in 3 cases, typhoid fever in 2, scarlet fever in 1, hydrophthalmus in 1, cyst of the brain in 1, tower skull in 1 and purpura hemorrhagica in 1; we have no reason to doubt these disorders as the essential etiological factors in these 20 cases of juvenile optic atrophy. However what shall we say regarding the remaining 53 or in 73 per cent. of our entire number of 73 cases. The Wassermann test on the blood was made in but 38 of our 73 cases (the test as a routine on new pupils was not begun until 1917). There resulted 8 with plus four and 1 with plus two among the 38 tested.

Three of these 53 cases had epileptic seizures, 2 were imbeciles, 1 had infantilism, 1 was unstable in station and gait, 1 had monolateral weakness and one was partially deaf.

The determination of whether the atrophy was primary or secondary in the 53 cases of unknown cause was noted in only 11 cases. Nystagmus is often so annoying as to make it impossible to differentiate accurately. Of the 11 cases, 8 were primary and 3 secondary atrophy.

TABLE 1. *Number and percentage for each five year period and for last period of three years*

Years	Number	Per cent.	Total
1895-1900	1		
1900-1903	3		
1903-1905	1		
1905-1906	1	4	17—16%
1906-1907	2	13	
1907-1908	6	20	
1908-1909	4	20	
1909-1910	4	20	
1910-1911	6	30	15—13%
1911-1912	2	10	
1912-1913	2	6	
1913-1914	3	33	
1914-1915	2	7	
1915-1916	0	0	13—12%
1916-1917	4	15	
1917-1918	2	8	
1918-1919	5	29	
1919-1920	2	13	
1920-1921	1	5	18—13%
1921-1922	6	17	
1922-1923	6	17	
1923-1924	1	4	
1924-1925	4	20	
1925-1926	2	11	5—10%
1926-1927	1	6	
1927-1928	2	11	

TABLE 2. *Vision*

	No. of cases	Per cent.
O.....	30	41
L. P.....	11	15
L. P. to 5/200.....	20	27
5/200 to 20/200.....	10	14
20/200 to 20/80.....	2	3

TABLE 3. *Ages Entered School*

Age	No. of cases	Per cent.
5-10.....	18	25
10-15.....	26	35
15-20.....	20	27
20-25.....	7	10
25-30.....	2	3

TABLE 4. *Ages Lost Sight*

Age	No. of cases	Per cent.
Before birth.....	21	28
0-5.....	11	15
5-10.....	23	31
10-15.....	10	15
15-20.....	8	11

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Among 1272 pupils attending 10 schools for the blind in this country during the last 15 years, 223, or 17.5 per cent. had lost their sight from optic atrophy—the greatest single cause. We thus see ophthalmia neonatorum again surpassed as the greatest single cause of blindness in youth. A shifting of forces is thus plainly indicated in work for the prevention of blindness.

Among 254 adult cases of optic atrophy

est authority that ever lived on syphilitic ocular changes. His book on "Syphilis and the Eye" is a masterpiece in its detailed and extensive review of all knowledge on the subject.

John Green⁸ found among 100 congenital syphilitic children, between 1 month and 14 years of age, 8 patients with optic neuritis, 6 with bilateral optic atrophy and 2 with unilateral optic atrophy; all the optic

TABLE 5. Size of communities where cases were born

Cities	Total population for each community (1920)	No. of cases	Per cent.	to each 100,000 of population
100,000 and more.....	1,097,307	27	37	3
100,000-5000	379,155	9	12	1
5,000-100	658,739	21	29	2
100 and less	1,268,854	11	15	1
Doubtful		5	7	
Totals	3,404,055	73	100	

in St. Louis City and the five counties of the state having populations greater than 60,000, 18, or 7 per cent. had lost their vision under 30 years of age.

Mr. N. Bishop Harman¹ reported 222 cases of optic atrophy with or without disseminated choroiditis among 1100 children in London schools for the blind, a percentage of 20.2 per cent. the second highest single cause of blindness. The author also stated that in 125 of these 222 children syphilis was definitely present, in 13 syphilis was probable and in 64 there were mental defects. The association of optic atrophy and disseminated choroiditis has not been observed by us.

Dr. H. Frese² found 143 cases (98 boys and 45 girls) of optic atrophy among 849 youthful blind students at the Federal Institute for the Blind at Steglitz, Berlin, a percentage of 17 per cent., the second largest single cause of blindness.

Are we justified then in saying that congenital syphilis was the probable cause of the optic atrophy in our 53 less 9 (cases having positive Wassermann tests) or 44 cases of optic atrophy of unknown origin?

According to Japha,³ Heine⁴ and Mohr and Beck,⁵ optic papillitis is uncommonly frequent in luetic infants. Heine⁴ found among 60 luetic infants 55 cases of optic neuritis.

Igersheimer⁶ and Fehr⁷ did not find in their own cases that this change was so frequent in syphilitic infants.

Igersheimer is without question the great-

atrophy changes were secondary.

Igersheimer⁶ thinks it probable that some of those blind from congenital syphilis lose their antibodies in the blood in the course of years and so react negatively to the Wassermann test. He thinks that syphilis plays an important role in blindness from optic atrophy among blind pupils in German institutions for the blind. Many cases reacting negatively to the Wassermann test are probably due to congenital syphilis. The beginning of the process occurs usually in the third or fourth year but not rarely first at puberty and the blindness can occur gradually or very suddenly.

There can be little doubt that practically all if not all the 44 cases of uncertain origin were due to congenital syphilis.

The prevention of juvenile optic atrophy is therefore mainly a matter of intensive antisiphilitic treatment to the parents, principally to the mother.

Metropolitan Building.

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